

WHAT IS CLAIMED IS:

1. An electroluminescent display apparatus, comprising:

a plurality of display cells arranged in a matrix form in which a plurality of scan lines and a plurality of data lines intersect, each of the display cells including

a select transistor whose gate receives a select voltage from one of the scan lines;

a drive transistor whose gate receives a data voltage from one of the data lines through the select transistor;

a capacitor whose one terminal is connected to the gate of the drive transistor; and

an electroluminescent element whose one terminal is connected to a source of the drive transistor; and

a scan line driving circuit that supplies a stepped pulse as the select voltage to each of the scan lines, the stepped pulse being formed of a first voltage and a second voltage larger than the first voltage, wherein

a drain of the drive transistor and other terminal of the capacitor are connected to a scan line next to the one of the scan lines.

2. The electroluminescent display apparatus according to claim 1, wherein the stepped pulse is formed so that the first voltage is allocated on a former of two cycles and the second voltage is allocated on a later of the two cycles, and the scan line driving circuit supplies the stepped pulse sequentially to the scan lines by shifting the stepped pulse by the

cycle.

3. The electroluminescent display apparatus according to claim 2,
wherein the scan line driving circuit further supplies a rectangular pulse
5 to a scan line different from a scan line to which the stepped pulse is
being supplied, and the rectangular pulse is formed of a third voltage
having a pulse width of the stepped pulse.

4. The electroluminescent display apparatus according to claim 3,
10 wherein the third voltage is equal to the second voltage.

5. The electroluminescent display apparatus according to claim 1,
wherein the scan line driving circuit further supplies a rectangular pulse
to a scan line different from a scan line to which the stepped pulse is
15 being supplied, sequentially by shifting the stepped pulse by the cycle,
and the rectangular pulse is formed of a third voltage having a pulse
width of the stepped pulse.

6. The electroluminescent display apparatus according to claim 5,
20 wherein the third voltage is equal to the second voltage.

7. The electroluminescent display apparatus according to claim 1,
further comprising a data line driving circuit that supplies a data voltage
to each of the data lines, the data voltage being not smaller than the
25 first voltage and smaller than the second voltage.

8. The electroluminescent display apparatus according to claim 1,
wherein the electroluminescent element is an organic light emitting
diode.
- 5 9. An electroluminescent display apparatus, comprising:
a plurality of display cells arranged in a matrix form in which a
plurality of select scan lines and a plurality of data lines intersect, each
of the display cells including
a select transistor whose gate receives a select voltage
10 from one of the select scan lines;
a drive transistor whose gate receives a data voltage
from one of the data lines through the select transistor;
a capacitor whose one terminal is connected to the gate
of the drive transistor; and
15 an electroluminescent element whose one terminal is
connected to a source of the drive transistor;
a plurality of write scan lines, each of the write scan lines being
arranged in a pair with each of the select scan lines and being
connected to a drain of the drive transistor and other terminal of the
20 capacitor; and
a scan line driving circuit that supplies a scan line select voltage
to each of the select scan lines, and that supplies a write reference
voltage to each of the write scan lines that is in a pair with the each of
the select scan lines, wherein
25 the scan line driving circuit supplies the scan line select voltage

and the write reference voltage at a voltage value and a timing such that a first phase, a second phase, and a third phase are sequentially repeated, the first phase indicates that the data voltage is written in the capacitor without allowing the electroluminescent element to emit light,
5 the second phase indicates that a voltage stored in the capacitor is held without allowing the electroluminescent element to emit light, and the third phase indicates that light emission by the electroluminescent element is sustained until the next first phase depending on the voltage stored.

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10. The electroluminescent display apparatus according to claim 9, wherein the scan line driving circuit supplies the scan line select voltage and the write reference voltage with respect to each of the select scan lines and each of the write scan lines, at a voltage value
15 and a timing such that a negative voltage is supplied to the capacitor, concurrently with the first to the third phases, and

the each of the select scan lines and the each of the write scan lines are different from the select scan line and the write scan line that are under the first to the third phases.

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11. The electroluminescent display apparatus according to claim 9, wherein the electroluminescent element is an organic light emitting diode.

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12. An electroluminescent display apparatus, comprising:

a plurality of display cells arranged in a matrix form in which a plurality of scan lines and a plurality of data lines intersect, each of the display cells including

5 a select transistor whose gate receives a select voltage from one of the scan lines;

a drive transistor whose gate receives a data voltage from one of the data lines through the select transistor;

a capacitor whose one terminal is connected to the gate
10 of the drive transistor; and

an electroluminescent element whose one terminal is connected to a source of the drive transistor;

a plurality of common lines, each of the common lines being connected to a drain of the drive transistor and other terminal of the
15 capacitor; and

a data line driving circuit that calculates a voltage drop in the electroluminescent element at a position in a direction of each of the scan lines, based on the position in the direction with respect to the each of common lines and a wiring resistance between the display cells
20 arranged on the each of common lines, and that supplies a data voltage corrected based on the voltage drop to each of data lines.

13. The electroluminescent display apparatus according to claim 12, wherein the electroluminescent element is an organic light emitting
25 diode.

14. A driving method of an electroluminescent display apparatus that includes

a plurality of display cells arranged in a matrix form in which a plurality of scan lines and a plurality of data lines intersect, each of the
5 display cells including

a select transistor whose gate receives a select voltage from one of the scan lines;

a drive transistor whose gate receives a data voltage from one of the data lines through the select transistor;

10 a capacitor whose one terminal is connected to the gate of the drive transistor; and

an electroluminescent element whose one terminal is connected to a source of the drive transistor, wherein a drain of the drive transistor and other terminal of the capacitor are connected to a
15 scan line next to the one of the scan lines, the driving method comprising:

first supplying a first voltage to each of the scan lines during a predetermined cycle;

second supplying a second voltage larger than the first voltage
20 to the each of the scan lines during the cycle, successively from the first supplying; and

third supplying a voltage not larger than a threshold voltage of the select transistor to each of the scan lines, at least during the cycle, successively from the second supplying.

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15. The driving method according to claim 14, wherein

the first supplying includes supplying a third voltage to each of the scan lines during the cycle, the each of the scan lines is different from the scan line to which the first voltage is being supplied,

5 the second supplying includes supplying the third voltage to the each of the scan lines during the cycle, and

the third supplying includes supplying a voltage not larger than a threshold voltage of the select transistor to the each of the scan lines, at least during the cycle.

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16. A driving method of an electroluminescent display apparatus that includes

a plurality of display cells arranged in a matrix form in which a plurality of select scan lines and a plurality of data lines intersect, each

15 of the display cells including

a select transistor whose gate receives a select voltage from one of the select scan lines;

a drive transistor whose gate receives a data voltage from one of the data lines through the select transistor;

20 a capacitor whose one terminal is connected to the gate of the drive transistor; and

an electroluminescent element whose one terminal is connected to a source of the drive transistor; and

25 a plurality of write scan lines, each of the write scan lines being arranged in a pair with each of the select scan lines and being

connected to a drain of the drive transistor and other terminal of the capacitor, the driving method comprising:

first supplying the select voltage and a write reference voltage to each of the select scans line and each of the write scan lines,

5 respectively, at a voltage value and a timing such that the data voltage is written in the capacitor, without allowing the electroluminescent element to emit light;

second supplying the select voltage and the write reference voltage to the each of the select scan lines and the each of the write
10 scan lines, respectively, at a voltage value and a timing such that a voltage stored in the capacitor is held, without allowing the electroluminescent device to emit light; and

third supplying the select voltage and the write reference voltage to the each of the select scan lines and the each of the write
15 scan lines, respectively, at a voltage value and a timing such that light emission of the electroluminescent device is sustained until the next first supplying, based on the voltage stored.

17. The driving method according to claim 16, further comprising
20 fourth supplying the select voltage and the write reference voltage to the each of the select scan lines and the each of the write scan lines, respectively, different from the select scan line and the write scan line to which the first supplying, the second supplying, and the third supplying are being applied, at a voltage value and a timing such that a
25 negative voltage is supplied to the capacitor, concurrently with the first

supplying, the second supplying, and the third supplying.

18. A driving method of an electroluminescent display apparatus that includes

5 a plurality of display cells arranged in a matrix form in which a plurality of scan lines and a plurality of data lines intersect, each of the display cells including

a select transistor whose gate receives a select voltage from one of the scan lines;

10 a drive transistor whose gate receives a data voltage from one of the data lines through the select transistor;

a capacitor whose one terminal is connected to the gate of the drive transistor; and

15 an electroluminescent element whose one terminal is connected to a source of the drive transistor; and

a plurality of common lines, each of the common lines being connected to a drain of the drive transistor and the other terminal of the capacitor, the driving method comprising:

20 calculating a voltage drop in the electroluminescent element at a position in a direction of each of the scan lines, based on the position in the direction with respect to the each of common lines and a wiring resistance between the display cells arranged on the each of common lines;

25 correcting the data voltage based on the voltage drop; and supplying the data voltage corrected to each of the data lines.